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The effectiveness of specific visual perceptual training on readiness scores was studied. Three different groups of 27 randomly selected first grade black pupils participated in this investigation over a 9-week period. The experimental group received specific visual perceptual training drawn from the Frostig Developmental Program in Visual Perception: the instructional control group had listening activities: and the control group received no specific treatment. Pretest readiness scores indicated equality among groups. Posttest analysis indicated there was a statistically significant difference between posttest scores of the experimental group and the instructional control group, and between the experimental group and the control group. These results proved the effectiveness of the Developmental Program in Visual Perception in improving readiness as measured by the Metropolitan Readiness Tests, Forms A and B. The results also indicated that the effect of visual perception treatment rather than the effect of interaction with the investigator was operative. (DO)

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AN EXPERIMENTAL STUDY OF VISUAL PERCEPTUAL TRAINING AND READINESS SCORES WITH CERTAIN FIRST-GRADE CHILDREN

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Statement of the Problem

Visual perception capabilities are often referred to in discussions of various aspects of readiness for school learnings. Therefore, the purpose of this study was to investigate the efficacy of specific visual perceptual training on readiness scores in an experimental situation with twenty-seven randomly selected first-grade pupils for a period of nine weeks.

The null hypothesis tested was that there were no statistically significant differences among three groups -- an Experimental Group receiving specific visual perceptual training drawn from the Beginning Pictures and Patterns portion of the The Developmental Program in Visual Perception by Marianne Frostig, an Instructional Control Group receiving listening activities, and a Control Group receiving no specific treatment -- with respect to gains in readiness as measured by the Metropolitan Readiness Tests, Forms A and B.

Population and Procedure

The total first-grade population (N=257) in two predominantly black elementary schools in Tuscaloosa, Alabama were used for selection purposes. The Metropolitan Readiness Tests, Form B was administered to the total population. The population sample, selected on the basis of pre-test scores, consisted of eighty-one

pupils chosen by stratified randomization. Three students were randomly chosen from each of three strata of the distribtuions from nine classrooms and were randomly assigned to three groups. The resulting three groups, each with an N of 27, were randomly assigned treatments.

The subjects in the Experimental Group and the Instructional Control Group were removed from their regular classrooms for experimental treatment which was administered three times weekly for a period of nine weeks. Twenty-seven lessons of thirty minutes duration were taught by the investigator.

The Experimental Group received instruction drawn from the Beginning Pictures and Patterns portion of The Developmental Program in Visual Perception (DPVP). This first level of the Frostig program focuses on four of the five visual perceptual skills which purportedly enhance the process of learning. These skills are as follows: Visual-Motor Coordination, Figure-Ground Perception, Perceptual Constancy, and Position in Space. The fifth skill, Spatial Relationships, is presented in the two more advanced levels of the program.

Frostig, in the accompanying manual, strongly urged that physical activities accompany the use of the DPVP. Accordingly, various physical activities such as walking across a two-inch by two-inch board raised three inches from the floor, "Simon Says"

games, body awareness games, directional body movement games, and finger games were included. Other activities included work with parquetry blocks, flannel board, sewing cards, Pla-Doh, wooden and paper picture puzzles; lacing shoestrings, stringing beads; and fastening buttons, clothespins, hook-eyes, and zippers.

Subjects in the Instructional Control Group received equivalent treatment time, but the time was devoted to listening activities appropriate for first-grade children. These activities consisted of stories told and read aloud, and listening to records. Care was taken in making this a time for listening and not a time for the teaching of specific skills. Verbal interaction was neither encouraged nor discouraged.

The Control Group was tested on the pre- and post-test measures, but did not meet with the investigator at any time during the experimental period. The subjects in this group continued to follow the regular program of studies in their first-grade classes.

All subjects were post-tested with the Metropolitan Readiness Tests, Form A.

Analysis of Data

The data were subjected to the analysis of variance to test for the significance of any differences among the three groups with respect to pre-test scores. The resulting F-ratio of .062 (see Table 2) did not approach statistical significance at the .05

level therefore, it was concluded that the three groups were similar on pre-test readiness scores at the beginning of experimentation.

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Table I

Analysis of variance for pre-test scores on the Metropolitan Readiness Tests, Form B for the Experimental, Instructional Control, and Control Groups

Source of Variance	Sum of squares	df	Mean Square	F
Between groups	9.574	2	4.787	0.062[a]
Within groups	6044.223	78	77.490	
Total	6053.805	80		

[a]Not significant

The pre-and post-test data were then subjected to the analysis of variance technique, Type I Design, to test for the statistical significance of differences among the pre-and post-test means treated simultaneously. The resulting F-ration of 4.74 was statistically significant beyond the .05 level of significance (see Table 2). Thus, the null hypothesis of no statistical significance was rejected.

Table 2

Type I design analysis of variance for pre-and post-test scores on the Metropolitan Readiness Tests, Form A for the Experimental, Instructional Control, and Control Groups

Source of Variance	Sum of squares	df	Mean Square	F
Between treatments	1929.250	2	964.625	4.74*
Error (between)	15262.187	75	203.496	
Total	17191.437	77		
Between Tests	7630.00	1	7630.000	218.93***
Tests x treatments	1376.687	2	688.344	19.75***
Error (within)	2613.312	75	34.851	
Total	11620.500	78		

*Significant beyond the .05 level of significance
***Significant beyond the .001 level of significance

The analysis of variance technique was applied to the post-test means of the three groups taken two at a time (see Tables 3, 4, 5)

Table 3

Analysis of variance for post-test scores on the Metropolitan Readiness Tests, Form A for the Experimental Group and the Instructional Control Group

Source of Variance	Sum of squares	df	Mean Square	F
Between groups	1766.75	1	1766.75	9.9***
Within groups	8744.56	49	178.46	
Total	10511.31	50		

***Significant beyond the .001 level of significance

Table 4

Analysis of variance for post-test scores on the Metropolitan Readiness Test, Form A for the Experimental Group and the Control Group

Source of variance	Sum of squares	df	Mean Square	F
Between groups	3026.06	1	3026.06	19.59***
Within groups	7720.06	50	154.40	
Total	10746.12	51		

***Significant beyond the .001 level of significance

Table 5

Analysis of variance for post-test scores on the Metropolitan Readiness Tests, Form A for the Instructional Control Group and the Control Group

Source of variance	Sum of squares	df	Mean Square	F
Between groups	161.72	1	161.72	1.08[a]
Within groups	7651.30	51	150.03	
Total	7813.02	52		

[a]Not significant

Predictive F - ratios (F) after Scheffe', were calculated. Table 6 presents the derived values of F' for levels .20 to .001.

Table 6

Levels of significance and values of F required for significance

Level of significance	F
.20	1.81
.10	2.18
.05	2.49
.01	3.13
.001	3.91

Results

This "post mortem" analysis indicated that there was a statistically significant difference between the post-test scores of the Experimental Group and the Instructional Control Group, and between the post-test scores of Experimental Group and the Control Group beyond the .001 level of significance. There was not a statistically significant difference between the post-test scores of Instructional Control Group and the Control Group at the .05 level of significance. Analysis at the .20 level of significance also yielded an insignificant F - ratio.

It was concluded, therefore, that the statistically significant differences obtained between the Experimental Group and the Instructional Control Group, as well as between the Experimental Group and the Control Group, indicated the efficacy of visual perceptual instruction drawn from The Developmental Program in Visual Perception in improving readiness as measured by the Metropolitan Readiness Tests for this population sample. That no statistically significant differences were found between the Instructional Control Group and the Control Group indicated that the effect of visual perception treatment rather than the effect of interaction with the investigator was operative. These findings strongly suggest that the DPVP is worthy of further empirical research.